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Reducing Medical Errors:
State of Florida Mandatory Training

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Answer Sheet: Reducing Medical Errors: *State of Florida Mandatory Training*

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Objectives

Upon completion of this course, the learner will be able to:

- Discuss the extent of the problem of medical errors in healthcare.
- Discuss the definition of medical errors.
- Identify patient safety organizations working on the issue of medical errors.
- Describe 10 priority evidence-based patient safety interventions promoted by the Agency for Healthcare Research and Quality.
- Discuss the development of a Healthcare Partnership between professionals and patients.
- Identify principles from the National Patient Safety Foundation's **Universal Patient Compact.**

Introduction

The safety of the patients in our care and treatment is an important goal during all healthcare encounters. Early studies in the 1960s already pointed to healthcare related errors as a problem for healthcare consumers. However, it was the startling report in 1999, from the Institute of Medicine (IOM) *To Err is Human*, that served as a wake-up call for healthcare professionals, multiple public and private healthcare and healthcare-related organizations, state legislatures and the federal government. The IOM report estimated that between 44,000 and 98,000 deaths annually are a result of medical errors; more than half of the adverse medical events occurring each year are due to **preventable** medical errors, causing the death of tens of thousands. The cost associated with these errors in lost income, disability, and healthcare costs is as much as $29 billion annually.

In a study on hospital pneumonia rates and sepsis rates (Eber, et. al , 2010), researchers looked at data from 59 million discharges, covering 40 of the 50 US states between 1998 and 2006. Patients who developed sepsis after surgery had to stay in the hospital on average nearly 11 days extra, at a cost of $32,900 per patient. Just under 20% of these patients died. Pneumonia patients stayed in the hospital an extra 14 days after surgery, at a cost of $46,400, and more than 11% of those patients died.

In the State of Florida, registered nurses and licensed practical nurses must complete 2 hours of continuing education related to the Prevention of Medical Errors in each 2-year licensure renewal period. **Access Continuing Education, Inc.** is a Florida-approved provider of continuing education for nurses, provider # 50-7628. Successfully completing this course will meet the Florida Board of Nursing requirement.

Scope of the Problem

Since the 1999 IOM report was issued, the issue of patient safety has been in the forefront of the healthcare literature, with multiple healthcare organizations putting significant resources into safety interventions. According to the **national** study, *Third Annual Patient Safety in American Hospitals* Study (p. 4, 2006):

- Approximately **1.24 million total patient safety incidents** occurred in almost 40 million hospitalizations in the Medicare population. These incidents were associated with **$9.3 billion of excess cost** during 2002 through 2004. For the second year in a row, patient safety incidents have **increased** - up from 1.14 and 1.18 million reported in the *First and Second Annual Patient Safety in American Hospitals* studies, respectively.
- Of the **304,702 deaths** that occurred among patients who developed one or more patient safety incidents, **250,246** were **potentially preventable**.

- Medicare beneficiaries that developed one or more patient safety incidents had a **one-in-four chance of dying** during the hospitalization during 2002-2004. This rate remains unchanged since the first study was released July 2003.
- Wide, highly significant gaps in individual patient safety incidents and overall performance exist between the top and the bottom performing states during 2002-2004.
- Minnesota, Wisconsin, Iowa, Michigan and Kansas ranked as the top states for hospital patient safety during the period studied.
- New Jersey, New York, Nevada, Tennessee and District of Columbia, ranked last for hospital patient safety during the period studied.
- Compared to the worst state (N.J.), the best state (Minn.) had an overall almost 30-percent lower relative risk of developing one or more of the 13 patient safety incidents in its hospitals. However, performance variation between best and worst state was even more significant with individual patient safety incidents. For example, patients had an almost 92-percent lower relative risk of developing post-operative physiologic and metabolic derangements (post-operative delirium) in the top state compared to the bottom state.
- When compared to the *Second Annual Patient Safety in American Hospitals* study, the rates of six key quality improvement focus areas remained unimproved in 2004. Focus areas include metabolic derangements, post-operative respiratory failure, decubitus ulcer, post-operative pulmonary embolus or deep vein thrombosis, and hospital-acquired infections. These six areas continued to **worsen** on average by almost 12 percent or more over three years (2002 through 2004).
- The **patient safety incidents with the highest incidence rates** continued to be failure to rescue, decubitus ulcer, and post-operative sepsis. Failure to rescue improved 13 percent during the study period, while postoperative sepsis worsened by almost 25 percent.

In July, 2006 the IOM issued another report on errors in healthcare. This report, *Preventing Medication Errors*, focused specifically on the high rates of medication errors. Most Americans have taken medication at one time or another. It's estimated that in any given week four out of every five U.S. adults will use prescription medicines, over-the-counter drugs, or dietary supplements, and nearly one-third of adults will take five or more different medications (IOM, 2006).

Some of the harm done by medications can be anticipated, as they are the potential side effects that may be caused by the medications. The potential benefit of using the medication is determined by the patient and prescriber to be worth the risk of the side effects which may be possible with the use of a particular medication. However, some adverse drug events (ADEs) occur as injuries that happened because of an error in prescribing, dispensing or administering a medication. Such errors can be prevented.

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The findings of the IOM study are that medication errors are quite common - and that they are very costly to the population. At least 1.5 million preventable ADEs occur in the U. S. each year. The true number may be much higher. ***A hospitalized patient in the US can expect to be subjected to more than one medication error per day!***

In the state of Florida, medical errors have improved, as per the above *Third Annual Patient Safety in American Hospitals Study.* Florida was among the16 states that performed statistically significantly better than expected.

Florida health officials have been collecting data on medical mistakes from hospitals and walk-in surgery centers since 2001. The reports do not include hospital names; they identify aggregate data only. Despite the improvement noted above, data collected by Florida officials indicate that more than 1,000 patients died in Florida hospitals from adverse events between January 2001 and June 2004. Additionally, nearly 400 patients have needed surgery to remove a sponge or other object left inside them in a prior operation (Gaul, Washington Post, 2005).

Defining Medical Errors

The National Patient Safety Foundation (NPSF), in 2003, defined patient safety and healthcare error (NPSF, 2005):

> **Patient safety** is the prevention of healthcare errors, and the elimination or mitigation of patient injury caused by healthcare errors.

> A **healthcare error** is an unintended healthcare outcome caused by a defect in the delivery of care to a patient. Healthcare errors may be errors of commission (doing the wrong thing), omission (not doing the right thing), or execution (doing the right thing incorrectly). Errors may be made by any member of the healthcare team in any healthcare setting.

There is no universal definition of medical errors. The many healthcare organizations that are currently focused on healthcare errors do not all define medical errors in the same way. Sometimes medical errors are called something other than an "error". Other terms or words used to identify a medical error include (Kirker, 2003):

- Adverse event, adverse outcome;
- Medical mishap, unintended consequences;
- Unplanned clinical occurrence; unexpected occurrence; untoward incident;
- Therapeutic misadventure; bad call;
- Peri-therapeutic accident;
- Sentinel event;
- Iatrogenic complication; iatrogenic injury;
- Hospital acquired complication.

Patient Safety Organizations

The Patient Safety and Quality Improvement Act of 2005 (Patient Safety Act) authorized the creation of Patient Safety Organizations (PSOs) to improve the quality and safety of U.S. health care delivery. The Patient Safety Act encourages clinicians and health care organizations to voluntarily report and share quality and patient safety information without fear of legal discovery. Despite the many terms used to describe medical errors, patient safety is the focus of multiple patient safety organizations. Their task is to collect data, assess it for trends, and make recommendations to hospitals and others about ways to prevent future mistakes. The US Department of Health and Human Services collates the data and is charged with disseminating best practices. Some patient safety organizations are:

- Agency for Healthcare Research and Quality

  The Agency for Healthcare Research and Quality (AHRQ) is a federal agency whose mission is to improve the quality, safety, efficiency, and effectiveness of healthcare for all Americans.

- National Quality Forum

  The National Quality Forum (NQF) is a private, not-for-profit membership organization created to develop and implement a national strategy for healthcare quality measurement and reporting. It is a unique public-private partnership with broad participation from more than 260 organizations that represent all sectors of the healthcare industry, including healthcare providers, consumers, employers, insurers, and other stakeholders. Among its members are the AARP, AFL-CIO, the American Hospital Association, the American Medical Association, the American Nurses Association, the American Society of Health-System Pharmacists, the Ford Motor Company, and General Motors.

- Institute of Safe Medication Practices

  The Institute for Safe Medication Practices (ISMP) is a nonprofit organization that works closely with healthcare practitioners and institutions, regulatory agencies, professional organizations and the pharmaceutical industry to provide education about adverse drug events and their prevention.

- Institute of Medicine

  The Institute of Medicine (IOM) is a nonprofit organization of the National Academies for science-based advice on matters of biomedical science, medicine, and health.

- Centers for Medicare and Medicaid Services

  The Centers for Medicare and Medicaid Services (CMS) is a government agency that administers the Medicare program and is responsible for the administrative simplification standards from the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and quality standards in healthcare facilities through its survey and certification activity.

- Joint Commission

  The Joint Commission, previously known as the Joint Commission for Accreditation of Healthcare Organizations (JCAHO), evaluates and accredits more than 15,000 healthcare organizations and programs in the United States. An independent, not-for-profit organization, the Joint Commission is the nation's predominant standards-setting and accrediting body in healthcare.

- Institute of Healthcare Improvement

  The Institute for Healthcare Improvement (IHI) is a not-for-profit organization driving the improvement of health by advancing the quality and value of healthcare.

Interventions

Many of the Patient Safety Organizations above have released goals for patient safety and have promoted particular interventions for the improvement of patient safety. This course provides an overview of some of the recommendations of a sampling of safety organizations. In particular interventions from the Agency for Healthcare Research and Quality (AHRQ) and a compilation of safety interventions focusing on the development of a healthcare partnership between provider and patient as a means of promoting patient safety and reducing medical errors.

Medical errors may occur in different health care settings, and those that happen in hospitals can have serious consequences. AHRQ, which has sponsored hundreds of patient safety research and implementation projects, offers these **10 Evidence-Based Tips to Prevent Adverse Events** (AHRQ, 2009a) from occurring in the hospital setting. These healthcare "tips" are a result of safety research.

1. **Prevent central line associated blood stream infections.**

    Central venous catheters or central line catheters, are placed into large veins in a patient's neck, chest, or groin to administer medication or fluids or to collect blood samples. Their placement disrupts skin integrity, allowing for potential infections. An infection can then cause bacteremia and hemodynamic changes and organ dysfunction can occur (IHI, 2008).

    Each year, an estimated 250,000 cases of central line-associated blood stream infection (CLABSI) occur in U.S. hospitals, and an estimated 30,000 to 62,000 patients who get the infections die as a result, according to CDC (AHRQ, 2009). Among patients in an intensive care unit (ICU), 48% have central venous catheters (IHI, 2008). The case fatality rate for catheter related blood stream infections is almost 20% (IHI, 2008).

    The site with the highest occurrence of infection is the femoral artery, especially in obese patients (IHI, 2008). The subclavian site has a lower risk of infection than the internal jugular vein (IHI, 2007). Risks and benefits for site selection must be weighed for each patient.

    In addition to the high human cost of central venous catheter infections, the financial burden is high as well. According to the Institute for Healthcare Improvement (2008), the attributable cost per bloodstream infection is up to $29,000 per case. The total financial burden attributable to HAIs is estimated to be between $28 billion to $33 billion each year (AHRQ, 2009).

    Being vigilant in preventing central line associated blood stream infections involves taking five steps *every time* a central venous catheter is inserted. These steps are often called "the central line bundle":

    1. Wash your hands;
    2. Use full-barrier precautions;
    3. Clean the skin with chlorhexidine;
    4. Avoid femoral lines; and
    5. Remove unnecessary lines.

    Taking these steps *consistently* reduced this type of deadly health care-associated infection to zero in a study at more than 100 large and small hospitals (AHRQ, 2009). The benefits of reducing such infections include (IHI, 2008):

    -   Better outcomes for patients;
    -   Reduced mortality;
    -   Improved satisfaction among nurses, physicians, patients and families;
    -   Financial benefits.

    For more information about the prevention of infection related to central venous line catheters and how to implement this program, go to http://www.ihi.org/IHI/Programs/Campaign/CentralLineInfection.htm and download the *Updated How-To Guide.*

2. Re-engineer hospital discharges.

In the years since hospital stays have been drastically reduced, discharge planning has often taken a back seat to the acute needs of the hospitalization. The transfer of patient care from the hospital to primary care or other providers in the community, at the time of discharge, is a high-risk process that is often characterized by fragmented, non-standardized, and haphazard care leading to errors and adverse events (Anthony, et al., 2005).

These "principles of the newly re-engineered hospital discharge", developed as a result of research, include the following (Anthony, et al., 2005):

- There must be explicit delineation of roles and responsibilities.
- Patient education must occur throughout the hospitalization, not only at the time of discharge.
- Information must flow easily from the primary care provider (PCP) to the hospital team, among the hospital team, and back to the PCP.
- Information should be captured throughout the hospital stay, not only at the time of (or after) discharge.
- Every discharge must have a written discharge plan that is comprehensive in scope and that addresses medications, therapies, dietary and other lifestyle modifications, follow-up care, patient education, and instructions about what to do if the condition worsens.
  - This comprehensive discharge plan should be completed before the patient leaves the hospital.
  - Patients at high risk of re-hospitalization should have the discharge plan reinforced by contact from the hospital team after discharge.
  - All information about the admission must be organized and delivered to the PCP within 24 hours.
  - Waiting until the discharge order is written before beginning the discharge process is likely to increase the risk of errors.
  - Efficient and safe hospital discharge is significantly more difficult to achieve if the case management staff works only the 7 a.m.-3 p.m. shift (i.e., the "first" shift).
  - All patients should have access to their discharge information in their language and at their educational level.

Reduce potentially preventable readmissions by implementing interventions founded on 11 discrete, mutually reinforcing components and has been proven to reduce re-hospitalizations and yields high rates of patient satisfaction.   Examples include assigning a staff member to work closely with patients and other staff to reconcile medications and schedule necessary follow-up medical appointments, creating a simple, easy-to-understand discharge plan for each patient that contains a medication schedule, a record of all upcoming medical appointments, and names and phone numbers of whom to call if a problem arises.

AHRQ-funded research conducted by the Boston University Medical Center's **R**e-**E**ngineered hospital **D**ischarge (Project RED) shows that taking these steps can help reduce potentially preventable readmissions by 30 percent. An online toolkit is available at http://www.bu.edu/fammed/projectred/.

3. Prevent venous thromboembolism.

Pulmonary embolism resulting from deep vein thrombosis (DVT)—collectively referred to as venous thromboembolism (VTE)—is the most common preventable cause of hospital death. Despite the inclusion of prevention interventions in various consensus guidelines, efforts at prevention of VTE are underused in the healthcare setting (Kucher, et al., 2005).

In the absence of prophylaxis, the risk of VTE across almost all populations of hospitalized patients is significant, as shown in Table 2. (AHRQ, 2008).

Table 1. Risk of Deep Vein Thrombosis in Hospitalized Patients	
Patient Group	**DVT Incidence (%)**
Medical patients	10-26
Major gynecological, urological, or general surgery	15–40
Neurosurgery	15–40
Stroke	11-75
Hip or knee surgery	40-60
Major trauma	40-80
Spinal cord injury	60-80
Critical care patients	15-80

Fortunately, pharmacologic methods to prevent VTE are safe, effective, cost-effective, and advocated by authoritative guidelines. Yet, despite the reality that hospitalized medical and surgical patients routinely have multiple risk factors for VTE, making the risk for VTE nearly universal among inpatients, large prospective studies continue to demonstrate that these preventive methods are significantly underutilized. The American Public Health Association has stated that the "disconnect between evidence and execution as it relates to DVT prevention amounts to a public health crisis." (AHRQ, 2008).

Individual health centers have published results of successful local initiatives for improving prevalence of VTE prophylaxis, however, no single strategy has proven yet to be effective, sustainable, and widely applicable to other centers. Experiences with VTE management are rapidly evolving, validating the risk assessment techniques and implementation techniques. To implement effective protocols that minimize the incidence of hospital-acquired VTE, while at the same time minimizing adverse outcomes, redesign is needed in both care delivery and performance tracking (AHRQ, 2008).

Using an evidence-based guide to create a VTE protocol can eliminate hospital-VTE. One such evidence-based guide is available from AHRQ, without charge. This guide explains how to take essential first steps, lay out the evidence and identify best practices, analyze care delivery, track performance with metrics, layer interventions, and continue to improve. Ordering information for *Preventing Hospital-Acquired Venous Thromboembolism: A Guide for Effective Quality Improvement* (AHRQ Publication No. 08-0075) is available at http://www.ahrq.gov/qual/vtguide/.

4. **Educate patients about using blood thinners safely.**

Surgical patients often leave the hospital with a new prescription for an anticoagulant, such as warfarin (brand name: Coumadin®), to prevent the development of VTE. However, if used incorrectly, such blood thinners can cause uncontrollable bleeding and are among the top causes of adverse drug events.

In addition the patient, education needs to be directed to, families, caregivers, staff and clinicians. Standardized order sets can be part of this educational process for staff and clinicians. Anticoagulant use in the prevention of VTE challenges the in-patient care system to monitor it's own effectiveness in obtaining

required laboratory studies, following compliance issues, ensuring dietary restrictions, tracking adverse drug events and preventing drug interactions when treating patients with anticoagulants. Another important area is transition of care from the in-patient to the out-patient setting. The need to monitor this process to ensure a seamless transition is stressed. Clearly this intervention dove-tails with the need to re-engineer hospital discharges.

The management of "high alert" drugs such as heparin and warfarin are significant challenges for all institutions. Multiple healthcare safety organization have the goal to promote best practices on the safe use of anticoagulant drugs. This goal would standardize care and implement best practices to reduce the number of medication errors that could lead to patient harm (HCIF, 2010):

- Demonstrating standardization through limiting the number of concentrations of heparin, including therapeutic heparin and heparin flush solutions;

- Developing or refining existing standard protocols and nomograms for prescribing, dispensing, administrating and monitoring of anticoagulant therapy;
- Implementing practices or procedures to avoid unsafe concomitant administration of multiple anticoagulants.

 A free 10-minute patient education video and companion 24-page booklet, both in English and Spanish, help patients understand what to expect when taking these medicines. Ordering information for *Staying Active and Healthy with Blood Thinners* (AHRQ Publication No. 09-0086-DVD) and *Blood Thinner Pills: Your Guide to Using Them Safely* (AHRQ Publication No. 09-0086-C) is available at http://www.ahrq.gov/consumer/btpills.htm. A downloadable version of the booklet appears in the "Resources" section of this course.

5. **Limit shift durations for medical residents and hospital staff whenever possible.**

According to the American Nurses Association (ANA) (2009), "Concern for the long term effects of overtime leading to fatigue include potential for diminished quality of care, errors or near misses, as well as the negative impact on the care-givers health. Research indicates that risks of making an error are significantly increased when work shifts are longer than 12 hours, when nurses worked overtime, or when they worked more than 40 hours per week." The ANA, in its Nationwide State Legislative Agenda, supports state laws and regulations prohibiting the use of mandatory overtime as well as pursuing federal legislation with similar goals.

As of 2009, fifteen states have restrictions on the use of mandatory overtime for nurses.   In thirteen states, these restrictions appear in state law**:** CT, IL, MD, MN, NJ, NH, NY, OR, PA, RI, TX, WA, and WV.   In two states, these mandatory overtime limit provisions appear in state regulations: CA and MO (ANA, 2009)**.**

Evidence shows that acute and chronically fatigued medical residents are more likely to make mistakes. Ensure that residents get ample sleep and adhere to 80-hour workweek limits. Residents who work 30-hour shifts should only treat patients for up to 16 hours and should have a 5-hour protected sleep period between 10 p.m. and 8 a.m. *Resident Duty Hours: Enhancing Sleep, Supervision, and Safety* is available at http://books.nap.edu/openbook.php?record_id=12508&page=R1.

6. **Consider working with a Patient Safety Organization.**

   As mentioned earlier in the course, Patient Safety Organizations (PSOs) work to reduce healthcare associated errors. When healthcare agencies/providers work with such organizations, the PSOs efforts can be put to practice. By reporting and sharing patient safety information with PSOs, your data helps others avoid preventable errors. By providing both privilege and confidentiality, PSOs create a secure environment where clinicians and healthcare organizations can use common formats to collect, aggregate, and analyze data that can improve quality by identifying and reducing the risks and hazards associated with patient care.

   The term *common formats* refers to the common definitions and reporting formats, specified by AHRQ, that allow healthcare providers to collect and submit standardized information regarding patient safety events. These formats apply to all patient safety concerns, including:

   - **Incidents**: patient safety events that reached the patient, whether or not there was harm;
   - **Near misses or close calls**: patient safety events that did not reach the patient; and
   - **Unsafe conditions**: circumstances that increase the probability of a patient safety event.

   The Patient Safety Act and the Patient Safety Rule authorized the creation of a Network of Patient Safety Databases (NPSD), to which PSOs, health care providers, and others can voluntarily contribute non-identifiable patient safety work product. The NPSD will be maintained as an interactive, evidence-based management resource for health care providers, PSOs, researchers, and other individuals and organizations. AHRQ will use data from the NPSD to analyze national and regional statistics, including trends and patterns, regarding patient safety events. Findings are to be made public and included in AHRQ's annual *National Healthcare Quality Report*.

   Information on PSOs and Common Formats is available at http://www.pso.ahrq.gov/.

7. **Use good hospital design principles.**

   A growing body of literature describes the link between a hospital's physical design and its key quality and safety outcomes. Hospital planners, expected to spend nearly $250 billion on new construction in the next 10 years, are consulting this evidence and incorporating it into their designs for capital construction projects (AHRQ, 2007).

   Evidence-based design is a term used to describe how the physical design of health care environments affects patients and staff. Key characteristics of evidence-based design in hospital settings include single-patient rooms, use of noise-reducing construction materials, easily accessible workstations, and improved layout for patients and staff (AHRQ, 2007).

   Evidence-based design elements can help hospitals reduce avoidable, and costly, incidents of patient harm, such as patient falls, hospital-acquired infections and medication errors (AHRQ, 2007):

> **Patient falls.** Patient falls, common in hospitals, can result in serious injuries, extend a patient's stay, and drive up the cost of care significantly. By 2020 the estimated annual

cost of fall injuries for older people will exceed $30 billion. Now that the Centers for Medicare and Medicaid Services no longer reimburse hospitals for the cost of patient falls that occur in their facilities, and insurers are likely to follow its lead, hospitals will bear a greater portion of this cost.

Patient falls can be avoided. Poor placement of handrails and small door openings are two primary causes of patient falls. Many falls can be reduced through providing well-designed patient rooms and bathrooms and creating decentralized nurses' stations that allow nurses easier access to at-risk patients.

Hospital-acquired infections. Single-bed rooms and improved air filtration systems can reduce the transmission of hospital-acquired infections. Infections can also be reduced by providing multiple locations for staff members to sanitize/wash their hands so they spend less time walking to sinks and have more opportunities to sanitize their hands before providing care.

Medication errors. Poor lighting, frequent interruptions and distractions, and inadequate private space can complicate filling prescriptions. Well-illuminated, quiet, private spaces allow pharmacists to fill prescriptions without the distractions that may lead to medication errors.

Patient rooms that can be adapted for the acuity of a patient can also reduce errors. Acuity-adaptable rooms reduce the need to transfer patients around the hospital and lessen the burden on the staff to communicate information to caregivers in the patient's new location.

Improved patient satisfaction is also a result of the improved physical design of hospitals. Reducing noise, providing more privacy, and making it easier for patients to find their way through the hospital can all improve patient satisfaction.

Frequent overhead announcements, pagers, alarms, and noisy equipment in or near patient rooms are stressful for patients and interfere with their rest and recovery. Single-bed rooms with high-performance, sound-absorbing ceilings and limited overhead announcements can substantially improve the healing environment for patients.

Evidence also shows that patients are more satisfied with their care when they are given adequate space to interact with their families. For example, single-patient rooms make it easier for families to stay with patients. Responding to the overwhelming evidence regarding how single-patient rooms improve patient safety, satisfaction, and quality outcomes, the American Institute of Architecture changed its 2006 construction guidelines to recommend that single rooms for medical, surgical, and postpartum nursing units in general hospitals be the standard.

Helping patients effortlessly find their way through hospitals can improve patients' overall care experience and increase satisfaction by reducing feelings of stress, anxiety, and helplessness for them and their families. Better navigation can be addressed architecturally through useful signage and easily navigable corridors.

Several design elements are associated with better quality outcomes for patients. In addition to improving patient satisfaction, reducing hospital noise can improve patient recovery and sleep time and reduce depression. Other factors, such as increased sunlight in patient rooms, views of nature, artwork, and music, also reduce patient stress and can lead to improved outcomes.

Ordering information for a free 50-minute DVD, *Transforming Hospitals: Designing for Safety and Quality* (AHRQ Publication No. 07-0076-DVD), is available at http://www.ahrq.gov/qual/transform.htm.

8. **Measure your hospital's patient safety culture.**

A culture of safety in the hospital is essential to help minimize medical errors. Safety must permeate every aspect of care within the organization. Safety and quality of patient care is dependent on teamwork, communication, and a collaborative work environment. Many healthcare organizations are already surveying the safety culture within the organization.

Safety culture surveys are useful for measuring organizational conditions that can lead to adverse events and patient harm in healthcare organizations. Organizations that want to assess their existing culture of patient safety should consider conducting a safety culture survey.

Safety culture surveys can be used to:

- Raise awareness about patient safety issues.
- Fulfill directives or regulatory requirements.
- Diagnose the current status of safety culture.
- Evaluate specific patient safety interventions or programs.
- Conduct internal and external benchmarking.
- Track change over time.

Another tool that can be used to survey hospital staff to assess your facility's patient safety culture is AHRQ's free *Hospital Survey on Patient Safety Culture* and related materials are designed to provide tools for improving the patient safety culture, evaluating the impact of interventions, and tracking changes over time.

There is also safety culture surveys customized for nursing homes and ambulatory care medical groups. Free patient safety culture surveys for hospitals (AHRQ Publication No. 04-0041), nursing homes (AHRQ Publication No. 08-0060), and medical offices (AHRQ Publication No. 08(09)-0059) are available at http://www.ahrq.gov/qual/patientsafetyculture/.

9. **Build better teams and rapid response systems.**

Developed by Department of Defense's Patient Safety Program in collaboration with the Agency for Healthcare Research and Quality, TeamSTEPPS (Team Strategies and Tools to Enhance Performance) is a comprehensive intervention to address patient safety (AHRQ, nd). It is:

- A powerful solution to improve **patient safety** within healthcare organizations.
- An **evidence-based teamwork system** to improve communication, collaboration and teamwork skills among health care professionals
- It is one of the key initiatives within patient safety. Patient safety experts agree that communication and other teamwork skills are essential for providing quality health care and preventing and mitigating medical errors. An organization that is ready to focus on teamwork and safety is more likely to benefit from a TeamSTEPPS intervention.

The goal of TeamSTEPPS is to provide the safest and highest quality health care. This involves optimizing a complicated delivery system of people and processes and requires change, including recognizing the need for change, developing a culture that will accept change, and fostering change in individuals' approaches to the health care delivery process. This change may involve giving people freedom and discretion, encouraging risk-taking and speaking up, giving permission to find team-driven solutions. Your institution must be willing to change its culture and processes to enhance teamwork and safety (AHRQ, nd).

TeamSTEPPS has a three-phased process aimed at creating and sustaining a culture of safety with (AHRQ, nd):

- A pretraining assessment for site readiness.
- Training for onsite trainers and health care staff.
- Implementation and sustainment.

TeamSTEPPS provides higher quality, safer patient care by producing highly effective medical teams that optimize the use of information, people, and resources to achieve the best clinical outcomes for patients (AHRQ, nd).

- Increasing team awareness and clarifying team roles and responsibilities.
- Resolving conflicts and improving information sharing.
- Eliminating barriers to quality and safety.

Rapid Response Systems are another important "team" in patient safety. A Rapid Response System (RRS), sometimes referred to as Medical Emergency Team (AHRQ, nd) :

- Brings teams of critical care expertise to the patient bedside when other resources are lacking.
- Has a wide range of health care professionals coordinating efforts.
- Treats patients with early warning signs of acute clinical deterioration, namely cardiac arrest.
- Has a common goal of patient stabilization.

Through implementing RRS initiatives, organizations have found positive results. Some examples include (AHRQ, nd):

- 50% reduction in non-ICU cardiac arrests (Buist, et al., 2002).
- Reduced post-operative emergency ICU transfers (58%) and deaths (37%) (Bellomo, et al., 2004).
- Reduction in cardiac arrest prior to ICU transfer (4% vs. 30%) (Goldhill, et al., 1999).
- 17% decrease in the incidence of cardiopulmonary arrests (6.5 vs. 5.4 per 1,000 admissions) (DeVita, et al., 2004).

A free, customizable toolkit called TeamSTEPPS™, provides evidence-based techniques for promoting effective communication and other teamwork skills among staff in various units or as part of rapid response teams.

Materials can be tailored to any healthcare setting, from emergency departments to ambulatory clinics. Ordering information for the TeamSTEPPS Multimedia Resource Kit (AHRQ Publication No. 06-0020-3) and information on the training sessions are available at http://teamstepps.ahrq.gov/index.htm.

10. Insert chest tubes safely.

Chest tube insertion is a life-saving procedure used to relieve tension pneumothorax or hemothorax, the accumulation of air or blood (fluid) under pressure in the pleural space, seen most often in trauma patients. If performed incorrectly, patients can suffer adverse outcomes and even fatal complications, and clinicians can be exposed to injury or infection (AHRQ, 2006).

A series of preventive measures for each type of problem, using an easy-to-remember mnemonic, UWET, was developed from the Joint Commission and stands for:

- **U**niversal Precautions (achieved by using sterile cap, mask, gown, and gloves).
- **W**ider skin prep.
- **E**xtensive draping.
- **T**ray positioning.

Remember UWET when inserting chest tubes. A free 11- minute DVD provides video excerpts of 50 actual chest tube insertions to illustrate problems that can occur during the procedure. Ordering information for *Problems and Prevention: Chest Tube Insertion* (AHRQ Publication No. 06-0069-DVD) is available at http://www.ahrq.gov/qual/chesttubes.htm.

For free copies of AHRQ tools, please call the AHRQ Publications Clearinghouse at 1-800-358-9295.

Development of the Healthcare Partnership

In 2006, the IOM identified a number of strategies to reduce medical errors. Among them was **"To develop a professional and practice style of collaboration and partnership with patients".** The National Quality Forum developed *Safe Practices* in 2003; the 2006 revision, Safe Practices for Better Healthcare, listed 30 practices. The 2009 update contains 34 practices, which are organized under seven functional categories. The first of these categories is "**Promoting a Culture of Safety".**

Healthcare has a history of a movement away from the paternalistic, provider-centered treatment that has been the prevailing practice methods for many years, to one in which the healthcare consumer and the provider work in partnership to plan and implement the best treatment and care for that particular individual or family. While some professional disciplines and some individual professionals have been more open to this kind of interaction with patients, others struggle with such relationships.

A collaborative partnership for healthcare between patients and providers requires that the provider must make communicating with the patient a priority. Good lines of communication between patient and provider improves the healthcare relationship. Such open communication, particularly good listening skills on the part of the provider, also facilitates education of the patient and encourages the patient to consult more actively with the provider. Improving provider patient communication has been highlighted as a method for reducing medical errors.

A controversial intervention, recommended by the IOM (2006), is that healthcare providers must be more forthcoming when a medical error occurs, and to clearly explain what consequences, if any, have resulted from the error. There are opposing viewpoints about disclosing medical errors to patients and family members. Risk managers, healthcare administrators and attorneys may not share this perspective.

The National Patient Safety Foundation (2009) has instituted a **Universal Patient Compact**. This Compact expands on principles contained in the Consumer Bill of Rights to describe a mutual covenant between healthcare providers and their patients. Utilizing this **Compact** as a guide to practice helps to promote a healthcare partnership between patient and provider. Because they often spend more time with patients than do other members of the healthcare team, nurses are in a unique position to be able to promote the Principles for Partnership contained in Universal Patient Contact. These Principles are not inconsistent with nurses ethical responsibilities outlined in the *Code for Nurses* (ANA, 2001).

NPSF

National Patient Safety Foundation®

The Universal Patient Compact
Principles for Partnership

As your healthcare partner we pledge to:

- Include you as a member of the team.
- Treat you with respect, honesty and compassion.
- Always tell you the truth.
- Include your family or advocate when you would like us to.
- Hold ourselves to the highest quality and safety standards.
- Be responsive and timely with our care and information to you.
- Help you to set goals for your healthcare and treatment plans.
- Listen to you and answer your questions.
- Provide information to you in a way you can understand.
- Respect your right to your own medical information.
- Respect your privacy and the privacy of your medical information.
- Communicate openly about benefits and risks associated with any treatments.
- Provide you with information to help you make informed decisions about your care and treatment options.
- Work with you, and other partners who treat you, in the coordination of your care.

As a patient I pledge to:

- Be a responsible and active member of my healthcare team.
- Treat you with respect, honesty and consideration.
- Always tell you the truth.
- Respect the commitment you have made to healthcare and healing.
- Give you the information that you need to treat me.
- Learn all that I can about my condition.
- Participate in decisions about my care.
- Understand my care plan to the best of my ability.
- Tell you what medications I am taking.
- Ask questions when I do not understand and until I do understand.
- Communicate any problems I have with the plan for my care.
- Tell you if something about my health changes.
- Tell you if I have trouble reading.
- Let you know if I have family, friends or an advocate to help me with my healthcare.

Learning to implement these principles into practice *consistently* is a challenge in today's hectic healthcare setting, but one that can only help to reduce medical errors. Making the time to communicate between healthcare providers and between providers and patients can significantly reduce medical errors and prevent adverse outcomes.

Conclusion

Medical errors have always been a component of healthcare. But the growing awareness of its impact on the health of patients, the welfare of providers and rising costs has led to research on safety goals as well as multiple interventions. The PSOs focus on evidence based practice that aims to reduce medical errors is imperative for good patient care.

Providers must remain knowledgeable and skilled in the various goals of patient safety and the numerous interventions that can help to reduce medical errors and promote patient safety. This course addresses just a few of the interventions that exist to make healthcare safer for all.

Resources

20 Tips to Help Prevent Medical Errors: Patient Fact Sheet What You Can Do		
1 **Be Involved in Your Health Care**	**The single most important way you can help to prevent errors is to be an active member of your health care team.**	• That means taking part in every decision about your health care. Research shows that patients who are more involved with their care tend to get better results. • Ask questions if you have doubts or concerns. • Ask questions and make sure you understand the answers. • Choose a doctor you feel comfortable talking to. • Take a relative or friend with you to help you ask questions and understand the answers.
2 **Medicines**	**Make sure that all of your doctors/healthcare providers know about everything you are taking. This includes prescription and over-the-**	• Keep and bring a list of ALL the medicines you take. • Give your doctor or other

22

		counter medicines, and dietary supplements such as vitamins and herbs.	healthcare provider, and pharmacist a list of all the medicines that you take, including non-prescription medicines.
			• Bring all of your medicines and supplements with you to your healthcare appointments. "Brown bagging" your medicines can help you and your healthcare provider talk about the medications and find out if there are any problems. It can also help your healthcare provider keep your records up to date, which can help you get better quality care.
			• Tell your healthcare provider about any drug allergies you have.
			• Ask about side effects and what to avoid while taking the medicine.
			• Read the label when you get your medicine, including all warnings.
			• Make sure your medicine is what the doctor ordered and know how to use it.
			• Ask the pharmacist about your medicine if it looks different than you expected.
3		**Make sure your doctor knows about any allergies and adverse reactions you have had to medicines.**	• This can help you avoid getting a medicine that can harm you.
4		**When your doctor writes you a prescription, make sure you can read it.**	• If you can't read your doctor's handwriting, your pharmacist might not be

			able to either.
5		**Ask for information about your medicines in terms you can understand-both when your medicines are prescribed and when you receive them.**	• What is the medicine for? • How am I supposed to take it, and for how long? • What side effects are likely? • What do I do if they occur? • Is this medicine safe to take with other medicines or dietary supplements I am taking? • What food, drink, or activities should I avoid while taking this medicine?
6		**When you pick up your medicine from the pharmacy, ask: Is this the medicine that my doctor prescribed?**	A study by the Massachusetts College of Pharmacy and Allied Health Sciences found that 88 percent of medicine errors involved the wrong drug or the wrong dose.
7		**If you have any questions about the directions on your medicine labels, ask.**	Medicine labels can be hard to understand. For example, ask if "four doses daily" means taking a dose every 6 hours around the clock or just during regular waking hours.
8		**Ask your pharmacist for the best device to measure your liquid medicine. Also, ask questions if you're not sure how to use it.**	Research shows that many people do not understand the right way to measure liquid medicines. For example, many use household teaspoons, which often do not hold a true teaspoon of liquid. Special devices, like marked syringes, help people to measure the right dose. Being told how to use the devices helps even more.
9		**Ask for written information about the side effects your medicine could cause.**	If you know what might happen, you will be better prepared if it does-or, if something unexpected

			happens instead. That way, you can report the problem right away and get help before it gets worse. A study found that written information about medicines can help patients recognize problem side effects and then give that information to their doctor or pharmacist.
10	**Hospital Stays**	**If you have a choice, choose a hospital at which many patients have the procedure or surgery you need.**	Research shows that patients tend to have better results when they are treated in hospitals that have a great deal of experience with their condition.
11		**If you are in a hospital, consider asking all healthcare workers who have direct contact with you whether they have washed their hands.**	Handwashing is an important way to prevent the spread of infections in hospitals. Yet, it is not done regularly or thoroughly enough. A recent study found that when patients checked whether healthcare workers washed their hands, the workers washed their hands more often and used more soap.
12		**When you are being discharged from the hospital, ask your doctor to explain the treatment plan you will use at home. This includes learning about your medicines and finding out when you can get back to your regular activities.**	Research shows that at discharge time, doctors think their patients understand more than they really do about what they should or should not do when they return home.
13	**Surgery**	**If you are having surgery, make sure that you, your doctor, and your surgeon all agree and are clear on exactly what will be done.**	- Ask your doctor, "Who will manage my care when I am in the hospital?" - Ask your surgeon: - Exactly what will you be doing? - About how long will it take? - What will happen after the surgery? - How can I expect to feel during

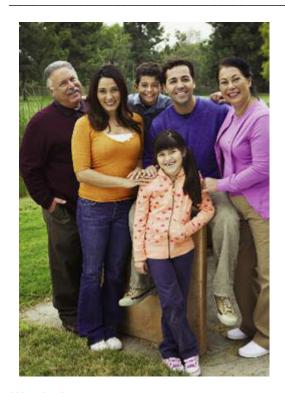|			recovery?
			• Tell the surgeon, anesthesiologist, and nurses about any allergies, bad reaction to anesthesia, and any medications you are taking.
			Doing surgery at the wrong site (for example, operating on the left knee instead of the right) is rare. But even once is too often. The good news is that wrong-site surgery is 100 percent preventable. The American Academy of Orthopaedic Surgeons urges its members to sign their initials directly on the site to be operated on before the surgery.
14	**Other Steps You Can Take**	**Speak up if you have questions or concerns.**	You have a right to question anyone who is involved with your care.
15		**Make sure that someone, such as your personal doctor, is in charge of your care.**	This is especially important if you have many health problems or are in a hospital.
16		**Make sure that all health professionals involved in your care have important health information about you.**	Do not assume that everyone knows everything they need to.
17		**Ask a family member or friend to be there with you and to be your advocate (someone who can help get things done and speak up for you if you can't).**	Even if you think you don't need help now, you might need it later.
18		**Know that "more" is not always better.**	It is a good idea to find out why a test or treatment is needed and how it can help you. You could be better off without it.
19			

		If you have a test, don't assume that no news is good news.	• Get the results of any test or procedure. • Ask when and how you will get the results of tests or procedures. • Don't assume the results are fine if you do not get them when expected, be it in person, by phone, or by mail. Call your doctor and ask for your results. • Ask what the results mean for your care.
20		**Learn about your condition and treatments by asking your doctor and nurse and by using other reliable sources.**	For example, treatment recommendations based on the latest scientific evidence are available from the National Guidelines Clearinghouse™ at http://www.guideline.gov. Ask your healthcare provider if your treatment is based on the latest evidence.

Agency for Healthcare Research and Quality (AHRQ). (2000). *20 Tips to Help Prevent Medical Errors. Patient Fact Sheet.* AHRQ Publication No. 00-PO38, Agency for Healthcare Research and Quality, Rockville, MD. Retrieved May, 2009 from http://www.ahrq.gov/consumer/20tips.htm.

Blood Thinner Pills: Your Guide to Using Them Safely

The name of my blood thinner is: _____

Call your doctor or pharmacy if you have questions about your blood thinner.

My doctor's phone number is:_____

My pharmacist's phone number is:_____

Notes:

_____

_____

_____

_____

_____

_____

_____

About Your Blood Thinner

Your doctor has prescribed a medicine called a blood thinner to prevent blood clots. Blood clots can put you at risk for heart attack, stroke, and other serious medical problems. A blood thinner is a kind of drug called an anticoagulant (*an te-ko-AG-u-lent*). "Anti" means against and "coagulant" means to thicken into a gel or solid. Blood thinner drugs work well when they are used correctly. To help you learn about your medicine, your doctor has given you this booklet to read. Depending on where you receive care, you may be seen by a doctor, nurse, physician's assistant, nurse practitioner, pharmacist, or other health care professional.
The term "doctor" is used in this booklet to refer to the person who helps you manage your blood thinner medicine. You and your doctor will work together as a team to make sure that taking your blood thinner does not stop you from living well and safely. The information in this booklet will help you understand why you are taking a blood thinner and how to keep yourself healthy. Please take time to read all of the information in this booklet.

Warning!
Tell your doctor if you are pregnant or plan to get pregnant. Many blood thinners can cause birth defects or bleeding that may harm your unborn child.

Always take your blood thinner as directed. For example, some blood thinners need to be taken at the same time of day, every day. Never skip a dose, and never take a double dose.
If you miss a dose, take it as soon as you remember. If you don't remember until the next day, call your doctor for instructions. If this happens when your doctor is not available, skip the missed dose and start again the next day. Mark the missed dose in a diary or on a calendar.

A pillbox with a slot for each day may help you keep track of your medicines.

Check Your Medicine

Check your medicine when you get it from the pharmacy. Does the medicine seem different from what your doctor prescribed or look different from what you expected? Does your pill look different from what you used before? n Are the color, shape, and markings on the pill the same as what you were previously given?

If something seems different, ask the pharmacist to double check it. Many medication errors are found by patients.

Using Other Medicines

Tell your doctor about every medicine you take. The doctor needs to know about all your medicines, including medicines you were taking before you started taking a blood thinner.
Other medicines can change the way your blood thinner works. Your blood thinner can also change the way your other medicines work.

It is very important to talk with your doctor about all the medicines that you take, including other prescription medicines, over-the-counter medicines, vitamins, and herbal products.

Products that contain aspirin may lessen the blood's ability to form clots and may increase your risk of bleeding when you also are taking a blood thinner. Talk with your doctor about whether or not you should take aspirin and which dose is right for you.

Medicines you get over the counter may also interact with your blood thinner. Following is a list of some common medicines that you should talk with your doctor or pharmacist about before using.

Pain relievers, cold medicines, or stomach remedies, such as:

- Advil®
- Aleve®
- Alka-Seltzer®
- Excedrin®
- ex-lax®

- Midol®
- Motrin®
- Nuprin®
- Pamprin HB®

- Pepto Bismol®
- Sine-Off®
- Tagamet HB®
- Tylenol®

Vitamins and herbal products, such as:

- Centrum®, One a Day®, or other multivitamins
- Garlic
- Ginkgo biloba
- Green tea

Tell your doctor about all your medicines.

Always tell your doctor about all the medicines you are taking. Tell your doctor when you start taking new medicine, when you stop taking a medicine, and if the amount of medicine you are taking changes. When you visit your doctor, bring a list of current medicines, over-the-counter drugs—such as aspirin— and any vitamins and herbal products you take.

Possible Side Effects

When taking a blood thinner it is important to be aware of its possible side effects. Bleeding is the most common side effect.

Call your doctor immediately if you have any of the following signs of serious bleeding:

- Menstrual bleeding that is much heavier than normal.
- Red or brown urine.
- Bowel movements that are red or look like tar.
- Bleeding from the gums or nose that does not stop quickly.
- Vomit that is brown or bright red.
- Anything red in color that you cough up.

- Severe pain, such as a headache or stomachache.
- Unusual bruising.
- A cut that does not stop bleeding.
- A serious fall or bump on the head.
- Dizziness or weakness.

Some people who take a blood thinner may experience hair loss or skin rashes, but this is rare.

Stay Safe While Taking Your Blood Thinner Call your doctor and go to the hospital immediately if you have had a bad fall or a hard bump, even if you are not bleeding.

You can be bleeding but not see any blood. For example, if you fall and hit your head, bleeding can occur inside your skull. Or, if you hurt your arm during a fall and then notice a large purple bruise, this means you are bleeding under your skin.

Because you are taking a blood thinner, you should try not to hurt yourself and cause bleeding. You need to be careful when you use knives, scissors, razors, or any sharp object that can make you bleed.

You also need to avoid activities and sports that could cause injury. Swimming and walking are safe activities. If you would like to start a new activity that will increase the amount of exercise you get every day, talk to your doctor.

You can still do many things that you enjoy. If you like to work in the yard, you still can. Just be sure to wear sturdy shoes and gloves to protect yourself. Or, if you like to ride your bike, be sure you wear a helmet.

Tell others.

Keep a current list of all the medicines you take. Ask your doctor about whether you should wear a medical alert bracelet or necklace. If you are badly injured and unable to speak, the bracelet lets health care workers know that you are taking a blood thinner.

To prevent injury indoors:

- Be very careful using knives and scissors.
- Use an electric razor.
- Use a soft toothbrush.
- Use waxed dental floss.
- Do not use toothpicks.
- Wear shoes or non-skid slippers in the house.
- Be careful when you trim your toenails.
- Do not trim corns or calluses yourself.

To prevent injury outdoors:

- Always wear shoes.
- Wear gloves when using sharp tools.
- Avoid activities and sports that can easily hurt you.
- Wear gardening gloves when doing yard work.

Food and Your Blood Thinner

The foods you eat can affect how well your blood thinner works for you. High amounts of vitamin K might work against some blood thinners, like warfarin (Coumadin®, *COU-ma-din*).

Other blood thinners are not affected by vitamin K. Ask your doctor if you need to pay attention to the amount of vitamin K you eat. Examples of some foods that contain medium to high levels of vitamin K and can affect how your blood thinner work are:

- Asparagus
- Avocado
- Broccoli
- Brussels sprouts
- Cabbage
- Canola oil
- Cranberries
- Endive
- Green onions
- Kale

Call your doctor if you are unable to eat for several days, for whatever reason. Also call if you have stomach problems, vomiting, or diarrhea that lasts more than 1 day. These problems could affect your blood thinner dose.

Alcohol. If you are taking a blood thinner, you should avoid drinking alcohol.

Keep your diet the same.

Do not make any major changes in your diet or start a weight loss plan before calling your doctor first.

Talk to Your Other Doctors

Because you take a blood thinner, you will be seen regularly by the doctor who prescribed the medicine. You may also see other doctors for different problems. When you see other doctors, it is very important that you tell them you are taking a blood thinner. You should also tell your dentist and the person who cleans your teeth.

If you use different pharmacies, make sure each pharmacist knows that you take a blood thinner.

Blood thinners can interact with medicines and treatments that other doctors might prescribe for you. If another doctor orders a new medicine for you, tell the doctor who ordered your blood thinner because dose changes for your blood thinner may be needed.

- Lettuce
- Liver
- Margarine
- Mayonnaise
- Parsley
- Soybean oil
- Soybeans
- Spinach
- Turnip, collard, and mustard greens

Blood Tests

You might have to have your blood tested often if you are taking a blood thinner. The blood test helps your doctor decide how much medicine you need.

The International Normalized Ratio (INR) blood test measures how fast your blood clots and lets the doctor know if your dose needs to be changed. Testing your blood helps your doctor keep you in a safe range. If there is too much blood thinner in your body, you could bleed too much. If there is not enough, you could get a blood clot.

Too Little	Best Range	Too Much
May cause a blood clot		May cause bleeding

Once the blood test is in the target range and the correct dose is reached, this test is done less often. Because your dose is based on the INR blood test, it is very important that you get your blood tested on the date and at the time that you are told.

Illness can affect your INR blood test and your blood thinner dose. If you become sick with a fever, the flu, or an infection, call your doctor. Also call if you have diarrhea or vomiting lasting more than 1 day.

Important reminders:

- Take your blood thinner as
- Directed by your doctor.
- Go for blood tests as directed.
- Never skip a dose.
- Never take a double dose.

My INR blood test range is: _____

I should get my blood tested at: _____

Phone: _____

Common Medical Conditions

If you have any of the following medical conditions or are at risk for having them, your doctor may have given you a prescription for a blood thinner. A blood thinner helps your blood flow more easily and lowers your risk for developing blood clots in your body.

Atrial fibrillation. Atrial fibrillation (*A-tre-al fi-bri-LA-shun*), a type of irregular heartbeat, is a fairly common heart disorder that you may or may not feel. Sometimes your heart will beat too fast or out of rhythm and may cause blood clots. Sometimes atrial fibrillation is also called A-fib.

Blood clots in the lung

A blood clot that forms in another part of your body, such as in your leg, can break loose and move through the blood to your lungs. The clot then gets stuck within a blood vessel that brings blood to the lungs (called a pulmonary embolism, *PULL-mun-ary EMbo-lizm*). If the lungs cannot get enough blood, they will be damaged, and you could stop breathing.

Blood clots. Blood clots (DVT, deep vein thrombosis, *throm-BO-sis*) form in a vein. The veins deep inside your leg, especially the calf and thigh, are the most common areas where clots occur. Blood clots can lead to damage of the blood vessels in your leg and break loose and cause other organ damage.

Family history. Some people are more likely to get blood clots because of a family history. You may have a genetic condition that causes your blood to form potentially dangerous clots.

Heart attack. A heart attack is caused by a lack of blood supply to the heart. The lack of blood happens when one or more of the blood vessels pumping blood to the heart are blocked.

Heart valve disease. Heart valve disease is any problem in one or more of the four valves in the heart. Heart valves keep blood flowing in one direction. They act as a door that swings open, allowing blood to flow through the sections of the heart.

Heart valve replacement. There are many types of artificial valves that are used to replace your own heart valve. The material used to make these valves may cause blood to stick and form clots.

Stroke. A stroke is caused by a blood clot that blocks a blood vessel in the brain. This blockage cuts off the blood flow to a part of the brain and can cause problems with your speech, swallowing, or movement of different parts of your body. You may be at a higher risk for a stroke if you've had a heart attack.

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Test

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1. Medical errors are a new phenomenon in healthcare, clearly a product of our fast-paced, technological healthcare system.

    A. True.
    B. False.

2. As identified in the *3rd Annual Patient Safety in American Hospitals* study, the patient safety incidents with the highest rates are:

    A. Post-operative respiratory failure, post-operative pulmonary embolus and metabolic derangements.
    B. Failure to rescue, decubitus ulcer and post-operative sepsis.
    C. A and B.
    D. Neither A or B.

3. In the state of Florida, medical errors have improved, as per the *Third Annual Patient Safety in American Hospitals Study.* Florida was among the 16 states that performed statistically significantly better than expected.

    A. True.
    B. False.

4. The National Patient Safety Foundation has defined medical errors as:

    A. An unintended healthcare outcome caused by a defect in the delivery of care to a patient.
    B. They may be errors of commission (doing the wrong thing), omission (not doing the right thing), or execution (doing the right thing incorrectly).
    C. Errors may be made by any member of the healthcare team in any healthcare setting.
    D. All of the above.

5. The Patient Safety and Quality Improvement Act of 2005 (Patient Safety Act) authorized the creation of Patient Safety Organizations (PSOs) to improve the quality and safety of US healthcare delivery by:

    A. Encouraging clinicians and healthcare organizations to voluntarily report and share quality and patient safety information without fear of legal discovery.
    B. Collecting data, assessing it for trends, and making recommendations to hospitals and others about ways to prevent future mistakes.
    C. The US Department of Health and Human Services collates the data and is charged with disseminating best practices.
    D. All of the above

6. According to the AHRQ's *10 Evidence Based tips to Avoid Adverse Events*:

    A. Central line bloodstream associated infections occur rarely as a result of the use of the femoral artery.
    B. The use of the 5 steps involved in the "central line bundle" has been shown to reduce the incidence of central line infections.
    C. Unused central lines should be maintained for the duration of the hospitalization.
    D. The skin around the central line insertion should be cleaned with povidone-iodine.

7. Discharge from the hospital is a potentially high-risk process that is often characterized by fragmented, non-standardized, and haphazard care leading to errors and adverse events. Research conducted at Boston University Medical Center, funded by AHRQ, on Re-Engineered Hospital Discharges (Project RED), which identified 11 interventions for discharge that, when implemented, can potentially reduce hospital readmissions by 30%.

    A. True.
    B. False.

8. In the absence of prophylaxis the risk of VTE across almost all hospitalized patients is significant. All the following is true EXCEPT:

    A. Despite the many expert consensus guidelines that promote interventions for the prevention of VTE, such interventions are underutilized in the healthcare setting
    B. According to AHRQ (2008), implementing effective protocols that minimize the incidence of hospital-acquired VTE, while at the same time minimizing adverse outcomes, requires redesign in both care delivery and performance tracking.
    C. Among hospitalized patients, the lowest risk of VTE is among those with spinal cord injury.
    D. The American Public Health Association has stated that the "disconnect between evidence and execution as it relates to DVT prevention amounts to a public health crisis." (AHRQ, 2008).

9. Research indicates that there is no correlation between the risks of making an error and nurses working shifts longer than 12 hours, when they worked overtime, or when they worked more than 40 hours per week.
    A. True.
    B. False.

10. Evidence-based design is a term used to describe how the physical design of health care environments affects patients and staff. Key characteristics of evidence-based design in hospital settings include single-patient rooms, use of noise-reducing construction materials, easily accessible workstations, and improved layout for patients and staff.
    A. True.
    B. False.

11. The value of a Rapid Response System (RRS), sometimes referred to as Medical Emergency Team, include all the following EXCEPT:

    • Brings teams of critical care expertise to the patient bedside when other resources are lacking, with the goal of patient stabilization.
    • Entirely eliminate the possibility of cardiac arrest in the emergency department.
    • Has a wide range of health care professionals coordinating efforts.
    • Treats patients with early warning signs of acute clinical deterioration, namely cardiac arrest.

12. A collaborative healthcare partnership between providers and patients should be developed, according to the Institute of Medicine's 2006 report on medication errors, as well at the National Quality Forum (2009). Among their recommendations are:
    A. Making good, open communication between providers and patients a priority.
    B. Improved listening skills on the part of the provider helps to facilitate the patient's collaboration with the provider.
    C. Full disclosure of risks and benefits of all medications and other healthcare interventions and insuring that the patient or the patient's representative understands the risks and benefits.
    D. All of the above.

13. Medical ethicists, healthcare professionals, hospital administrators and risk managers all agree that errors should never be disclosed to patients.
    A. True.
    B. False.

14. When healthcare results in an injury, the National Patient Safety Foundation indicates that the following should occur:
    A. Patient and family/representative are entitled to a prompt explanation of how the injury occurred and its short and long-term impact.
    B. If the injury occurred with a medical error contributing to the situation, a truthful and compassionate explanation about the error, and the remedies available, should be made to the patient/family/representative.
    C. The patient/family/representative should be informed that the factors involved in the injury will be investigated so that steps can be taken to reduce the likelihood of similar injury to others.
    D. All of the above.